Coenzyme Q10 as an adjunctive therapy in patients with congestive heart failure

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dissections is attractive in selected cases (adverse anatomy, small vessels, type A-B dissections). However, we believe that only properly designed studies will be able to determine whether this strategy is superior to stenting in most patients experiencing nonocclusive dissections. In the interim, accepting the potential risk of vessel closure and the logistic implications (prolonged observation or even repeat angiography) inherently associated with the conservative strategy should be weighed against the results of coronary stenting using currently available stent designs. Although we sympathize with the words of caution against the indiscriminate use of stents, it would appear more reasonable to challenge first the systematic use of “elective” stenting in clinical/angiographic settings where its efficacy—as compared with PTCA—remains largely unsettled.

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REPLY

Dr. Alfonso asks why two patients in our study (1) with occlusive dissection after percutaneous transluminal coronary angioplasty (PTCA) were excluded and when these dissections occurred. As it is clearly stated in the article these two type E dissections evolved toward complete artery occlusion during the procedure and how they caused an acute myocardial infarction immediately after the procedure. Because the study reported the results of nonocclusive unstented dissections, they were excluded from the analysis at the beginning.

As far as the second point is concerned, we have acknowledged the higher prevalence of lesions A and B in the unstented group, but this limitation derives from the later stage in which the stented patients were assessed, when the easy availability of stenting allowed higher inflation pressures. However, although unstented patients had a higher prevalence of dissections grades A and B (namely 85% vs. 56% at 24 h), the restenosis rate for stented and unstented patients was similar for each dissection grade (p = NS).

What we would like to stress in our study is that in this stenting era, where there is a growing and widespread use of these devices (2), the “minor” dissections (type A and B), most frequently occurring during PTCA, are associated with a very low risk of complications and restenosis, suggesting a more conservative approach.

Finally, Dr. Alfonso states that “the large lumen diameter of the dissected segments indicates that the dissection image was fully included into the lumen measurements.” However, as clearly shown in Table 1 of our article, the mean lumen diameter post-PTCA in dissected vessels was not 3.23 ± 0.65 mm but 3.11 ± 0.89 mm, a lower value than that of the mean reference artery diameter pre-PTCA (3.18 ± 0.7 mm) in the same vessels.

We do agree that the methodology of quantitative coronary angiography is technically demanding, especially for the analysis of dissected segments. Therefore, we are promoting in our Institute new and different tools for quantitative analysis, such as intracoronary ultrasound (IVUS), coronary Doppler evaluation, and myocardial fractional flow-reserve measurement.

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REFERENCES


Coenzyme Q10 as an Adjunctive Therapy in Patients With Congestive Heart Failure

Lack of effect from treatment with coenzyme Q10 in congestive heart failure is not an objective title or conclusion for the study by Watson et al. (1) in which the main limitation obviously is their sample size and its lack of study patients. Even so, the investigators state in their introduction that previous studies with coenzyme Q10 “lack credibility because of small sample sizes, lack of controls, etc.”

The majority of the 27 study patients, who were not classified according to the New York Heart Association (NYHA), were seemingly at late-stage disease (mean length of symptoms 3.4 years). Mean patient age was 55 years, which is compatible with predominantly ischemic origin. This was also recently confirmed at an International Conference in Sydney, Australia—“Oxidative Pathways in Health and Disease”—in a lecture by one of the co-authors, Nicholas Bett (2). However, according to the Watson et al. (1) study, in the Patients’ Demographics in Table 1, 77% of the patients were listed as having dilated cardiomyopathy. This is a patient clientele that is, at least partially, prone to respond either spontaneously or to medical intervention with subsequent improvement of myocardial function.

Conversely, it is well-known that changes—and not least improvements—in echocardiographic parameters of left ventricular (LV) function are minimal in late-stage disease, especially in heart failure due to ischemic heart disease. This is why the
calculated number of patients necessary (n = 17) in this cross-over trial seems highly underestimated.

In a nearly threefold larger trial of 79 patients from Scandinavia, the same double-blind, cross-over design was used over two periods of three months on coenzyme Q10 100 mg/day or placebo. The beneficial results of this study were presented initially at The American College of Cardiology Meeting in 1992 (JACC 1992; 19:216A, abstract 774–6) and later published in the Journal of Cardiac Failure (3). Watson et al. (1) have not included this trial in their reference list.

In the Scandinavian Multicenter Study, a balanced randomization was used with respect to the diagnosis of ischemic versus nonischemic disease and the treatment with or without an angiotensin-converting enzyme inhibitor. There was a slight improvement on LV ejection fraction at volume load based on the results from the MUGA scans (p = 0.025). Maximal exercise capacity increased slightly but significantly (p = 0.016) and coenzyme Q10 mediated a significant decrease in the scoring for dyspnea (p = 0.007) and leg fatigue (p = 0.04) at end-exercise (using the Borg-scale). According to the scoring from the Quality of Life Questionnaire, the total score (p = 0.016), the physical activity level (p = 0.048) and the life satisfaction (p = 0.016) increased significantly during the coenzyme Q10 period.

During the last 15 years, only 2 of 12 double-blind heart-failure trials have been “neutral” (i.e., without positive effect or side effects), whereas the remaining 10 studies have been positive and statistically significant with respect to improvement in clinical and/or hemodynamic parameters (4). In Watson and colleagues’ “neutral study,” adequate methods to assess myocardial function were used, but obviously the trial was insufficiently powerful to confirm or reject the hypothesized increase in LV function.

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REFERENCES

REPLY
We thank Dr. Mortensen for his interest in our study (1). We assure him that the data we reported on patient demographics are correct—that over three-quarters of our patients suffered from dilated cardiomyopathy while the remainder had coronary heart disease. When we stated that we would require 17 patients in order to demonstrate an increase in left ventricular ejection fraction from 25% to 30% with a standard deviation (SD) of 5% using 95% confidence intervals (CI) with a power of 80% (1), we did no more than calculate the probability that our failure to show such a change (a negative study) would reflect a true lack of effort.

The design of the Scandinavian study to which Dr. Mortensen refers (2) was very similar to that of our trial. Despite having nearly three times as many patients, it also failed to show any significant difference (p < 0.05) in this primary end point. The study reported by Permanetter et al. (3) also failed to show any therapeutic effect of coenzyme Q10. Meta-analysis of clinical trials of coenzyme Q10 treatment of congestive heart failure might be seen as encouraging but cannot be taken as any more than an argument for more blinded control studies (4,5).

We agree with Dr. Mortensen that if agents such as coenzyme Q10 are to be helpful, this would more likely be demonstrable early in the course of heart failure. Unfortunately, success in treating chronic failure with angiotensin-converting enzyme inhibitors (6), beta-adrenergic blockers (7), and spironolactone (8) means that it has become increasingly difficult to recruit patients for trials of unproven agents until they have been stabilized on what must now be regarded as standard therapy.

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REFERENCES
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